

# CURRICULUM VITAE

## Andrei Ludu

Professor of Mathematics

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<http://fusion.erau.edu/faculty/index.cfm?hrefkey=17E804E9CCF128>

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Education:

**Doctor of Philosophy, Ph.D.** in Physics 1989, Bucharest University, and Institute for Atomic Physics, Bucharest-Magurele, Romania. Dissertation *Group Transformation Method in Hot Plasma Physics and Thermonuclear Fusion*, Adviser: Prof. Ioan I. Popescu

**MS** - Theoretical physics and mathematics, June 1980, Bucharest University.

**BS** - Theoretical solid state physics, June 1979, Bucharest University.

Minor in physics: Matter at ultra-height energy density.

## Professional Experience

### *Faculty Positions*

- 1985-1990 Assistant Professor, Bucharest University, Faculty of Physics.
- 1990-1993 Lecturer, Bucharest University, Faculty of Physics.
- 1993-2001 Associate Professor of Theoretical Physics, Bucharest University
- 1999 Adjunct Assoc. Prof., Our Lady of The Lake College, Baton Rouge, LA.
- 2001-2003, Adjunct Assist. Prof., Louisiana State University, Baton Rouge.
- 2001-2004, Assistant Professor, Dept. Chemistry and Physics, Northwestern State University.
- 2002-2011, Full Member of Graduate Faculty, Northwestern State University
- 2004-2009 Associate Professor, Dept. Chemistry and Physics, Northwestern State University.
- 2006 Tenured.
- 2009-2011 Professor, Dept. Chemistry and Physics, Northwestern State University.
- 2011-Present Professor, Dept. Mathematics, Embry-Riddle Aeronautical University.

### *Research Positions*

- 1980-1985 Researcher, Institute of Atomic Physics, Bucharest-Magurele
- 1996-1999 Postdoctoral Researcher, Louisiana State University, Department of Physics and Astronomy
- 1999-2001, Senior Postdoctoral Researcher, Louisiana State University, Baton Rouge.
- 1995 and 2006-present, R & D consultant, Procter & Gamble, Cincinnati and Frankfurt/Main, USA.
- 2008, Antwerp University, Physics Department, Condensed Matter Theory Group, Antwerp, Belgium
- 2011-Present, Scientific manager, Nonlinear Wave Lab 2, ERAU, Math. Dept., LB 173 A.

### *Visiting Appointments*

- 2008-2009, visitor Niels Bohr Institute, Copenhagen, Denmark.
- 2008, February, Trinity College, Dublin, Ireland.

- 2008, Postdoctoral position, Antwerp University, Physics Department, Condensed Matter Theory Group, Antwerp, Belgium
- 1993-1997 Guest Professor - J. W. Goethe University, Institute for Theoretical Physics, Frankfurt/Main, Germany (with Prof. Walter Greiner).
- 1996-1997 Visiting Professor, GSI-Darmstadt, Germany
- 1993-1996 Guest Professor - Justus Liebig University, Institute for Theoretical Physics, Giessen, Germany (with Prof. Werner Scheid)
- 1994 Visiting Professor: Abo Akademi, Dept. of Physics, Turku, Finland
- 1993 Visiting Professor, Universite Libre de Brussels, Belgium, (with Prof. C. Quesne, Directeur de Recherches FNRS) and 2008 at prof. G. Nicolis.

#### *Fellowships*

- 2008 Postdoctoral researcher, Antwerpen Universiteit, Condensed Matter Theory Group, 171 Groenenborgerlaan, Antwerp, Belgium 2020 (sabbatical leave one year).
- 1997 Visiting Scientist, Theoretical Division T-8 and Center for Nonlinear Studies (CNLS), Los Alamos National Laboratory 1996,2001 and 2005.
- 1994 DAAD-Fellowship, University Giessen, Germany
- 1992-1993 Visiting scientist, Institute for Theoretical Physics, University Frankfurt/Main, Germany, Prof. W. Greiner.
- 1991-1993 Visiting Scientist, Institute for Theoretical Physics, University Giessen, Germany, Prof. W. Scheid
- 1990, 1994 and 1995 International Center for Theoretical Physics (ICTP), Trieste, Italy (4/90-visiting scientist; 12/941/95 visiting scientist; 7-8/95-visiting professor).
- 1990 International Office Fellowship Kern Forschungs Zentrum Karlsruhe, Germany
- 1986 Visiting Scientist, Kurceatov Institute of Atomic Physics, Moscow, Russia

#### *Administration*

- Founder **IDEAS Program** at Northwestern State University for interdisciplinary research in science (2003) <http://nsula.scitech.edu/IDEAS>.
- NSU Libraries Improvement Focus Group
- Chair of the Enrichment Fund Committee of the NSU Research Council, and member in the executive board.

#### *Grants:*

- 2013-2015, NSF Grant number 1244967 *Coalition for Undergraduate Computational Science and Engineering: Proof of Concept*, Co-PI, \$ 220,000
- 2012-2013, Reasearch Contract with GFS Corp, Florida PI, \$ 30,500 (*Bi-fluid mixer system* )
- Louisiana Board of Regents LASIP (Ligo science) Grant: "Understanding Waves, Optics and Gravity through Project-based Inquiry, Hands-On Demonstrations and Online Learning", 2009-2011, \$ 180,000.
- NSU Enrichment Grant for Professional Development, NEF PD 07-08 R1-005, \$ 5000 (2007-8) PI: Dr. A. Ludu
- NSU Enrichment Grant for Professional development, PD 04-05 R1-007, \$ 2400 (2004-5)
- Board of Regents R & D Support Fund Research Competitiveness Subprogram Grant: LEQSF-(2005-07) RD-A-45, \$100k with Dr. N. Hutchings, LSUS (Co-PI)
- Louisiana Board of Regents TGEF grant, October, 2003.

- 2003 NSF Grant No. DMS-0306887 for the  $XIV^{th}$  International Congress on Mathematical Physics, 2003.
- Louisiana Board of Regents grant "Preparing College Faculty for Redesign: Content, Technology and Standards" 2002-2003, NSU.
- Student Technology Fee Grant at NSU (PI) 2004 \$ 15,000.
- 2002-04, National Science Foundation Grant PHY-0140274 (PI)
- 2001-02, LaSIP Grant (Board of Regents, Louisiana) No. 1214NWSTU (Director)
- 1996-2001, Grant and Cooperative Agreement, No. EPS-9720652 from the Louisiana Board of Regents Support Fund
- 1994 Contract of Scientific Research with Procter & Gamble Co. (PI) \$ 12,000.
- 1996-1999, National Science Foundation Grant No. 9970769
- 1994-95 Romanian Academy Special Grant of Research (PI)
- 1980-1985 Program "H", Grant for research in ultra-height magnetic fields from National Council for Technology and Science, Bucharest, Romania.
- 1980-1985 The National Council for Nuclear Energy Grant of research, Bucharest, Romania.

*Degrees and Academic Honors:*

- The Mildred Hart Bailey Research Award, 2003
- Member Int. Assoc. Mathematical Physics since 1996
- $\Phi K \Phi$  Honor Society faculty member, 2005.
- SIAM Activity Group (SIAG) on Nonlinear Waves, affiliated member, May 2002
- $\Lambda\Lambda$  Freshman Honor Society diploma for superior instruction, Louisiana State University, 2000.
- International Who's Who of Professionals<sup>TM</sup>, *Who's Who Historical Society* (1999, Jacksonville, NC) ISBN-1-882952-22-7, 2, 1-1695.
- 1996 Who's Who in The Balkans, 1996.
- International Center For Theoretical Physics Certification of Course Completion, Trieste, Italy, 1990.
- Recipient of the Exceptional National Grant of Merit, Bucharest University, 1987-88.

*Research Accomplishments:*

- Built the Nonlinear Wave Lab 2 (NLWL 2) at ERAU, 2011-2012. Investment \$ 22,000, Involvement 24 students, 6 faculty.
- *Nonlinear fluid dynamics:* Nonlinear hydrodynamics of free surface fluids, solitons on compact systems, large amplitude oscillations and break-up in drops, shells and bubbles; generalized KdV equation, concave solitary waves;
- *Nuclear and particle physics:* Nonlinear models in heavy ion physics, cluster radioactivity, fission and scattering in coupled channels. Applications in nuclear physics of nonlinear models. Quasi-molecular spectra, nonlinear rotator-vibrator models. Instantons and cluster decay. Quantization of extended particles on compact surfaces. Algebraic scattering theory for coupled-channels. q-deformed symmetries applied to fractional statistics.
- *Biomathematics:* studies of swimming for motile flagellated cells, propagations of self-generated solitons along flagella, and cell body deformations.
- *Mathematical Physics:* Nonlinear equations, Nonlinear symmetries and dispersion equations, Hopf algebras, quantum groups and application in symmetry breaking of nuclear group theoretical models and algebraic scattering theory.

- *Wavelets*: Nonlinear symmetries of wavelets, self-similarity and nonlinearity; wavelets as Hamiltonian systems; compactons and wavelets
- *Plasma Physics*: Thermonuclear controlled fusion; Symmetries and nonlinear methods applied in hot and dense plasma, topological methods in ultra-height magnetic fields, generator (explosive driven) and amplifiers of ultra-height magnetic fields and electric currents; high-energy pulse generation with explosive driven PZT systems.

*Service and administration:*

- Guest Editor *Mathematics and Computers in Simulations*, Elsevier Press, 2010-present
- Co-Director IDEAS Program.
- Guest Editor MATCOM, Elsevier (Math. Comp.Sim.) 2007-2009. (<http://ees.elsevier.com/matcom/>)
- Editor for International Journal of Nonlinear Sciences and Numerical Simulation, ISSN:1565-1339 (<http://www.ijnsns.com/>)
- Editor for IJCMNS journal
- Representing College of Science and Technology in the NSU Research Council.
- **Reviewer and/or adjudicator:** *Journal of Mathematics and Computer in Simulation, Physical Review C, E, and Physical Review Letters, International Journal of Modern Physics E, Modern Physics Letters, Journal of Physics G: Nuclear and Particle Physics, Journal of Physics A: Mathematics and General, Rev. Mex. de Fisica, European Journal of Physics, Physics Letters A.*
- Consultant, National Science Foundation panel
- Member in Editorial Board of Romanian Journal of Physics, 1995. (<http://www.ear.ro/3brevist/rv43/edbord.html> )

*Memberships:*

- Graduate School NSU, April, 2002
- International Association of Mathematical Physics, 2000.
- Affiliate, Institute of Physics, London, UK, 1999.
- "E. P. Wigner International Committee for Mathematical Physics, 1998.
- New York Academy of Sciences, New York, NY, 1999
- American Association for the Advancement of Science, New York, NY, 1996.
- American Physical Society, New York, NY, 1998
- Research center for Theoretical Physics, Bucharest-Magurele, 2005 (<http://fpcm5.fizica.unibuc.ro/CFT/membrii.htm>)
- Romanian Society of Physics, Bucharest, 1987.

*Creative work and scientific original contributions:*

- Obtained a new large amplitude collective nonlinear mode of oscillation of free surface of liquid drops, *rotons*, 1997. Result quoted in 42 peer reviewed articles, and in 2 books. Introduction of the "Rotator-Vibrator-Soliton Model" of nucleus to explain the spontaneous emission of clusters from heavy nuclei (1991-95). Quantization of the large amplitude collective motion in nuclei as solitons (1993). These decays,  $^{14}\text{C}$ ,  $^{20}\text{Ne}$ , are present on the most recent *Chart of The Nuclides* (Naval Reactors, U.S. Department of Energy, 1999).
- Description and prediction of energy and spin for quasi-molecular states in  $\alpha + 28^{\text{Si}}$ ,  $\alpha + 20^{\text{Ne}}$  scattering. Introducing nuclear clusters as quantum extended objects (solitons) on nuclear surface. Predictions for more than 300 experimental resonance and spins within 0.3% error (1993-94).
- Introduction a general pattern of unification for the energy levels of the three fundamental interacting boson model chains by means of quantum deformations.

- Prediction of existence of both solitons (rotons) and anti-solitons on liquid drops (1998) put into evidence experimentally.
- Introducing new types of quantum deformations: first application of q-groups in breaking of symmetry in algebraic scattering theory: deformation of bound states versus scattering states, differential smooth realization of transformation from discrete to continuous and compact to non-compact representations (1992-93).
- Unification of discrete and continuous symmetries for 2-d Hamiltonian systems(1996).
- Nonlinear symmetries for wavelets. Wavelets as Hamiltonian systems. Connection between wavelets and Fourier series through q-deformations (1996-97).
- A new generalized Korteweg de Vries equations for fluids with free surface (2001).
- Anti-soliton pairs for fission and exotic decays of heavy nuclei (1999-2000)
- Introduction of an exact analytic expression for the Laplace Transform of Spherical Bessel Functions (2001)
- Generalization of KdV equation in fluids, for an arbitrary geometry, and connections between nonlinearities and self-similarity through a difference-equation mapping (2002-3).
- Bio-physics: Geometrical model of bending and twisting in axoneme-like filaments bundles. MKDV model for elastic model of flagellar motion (2004).
- Nonlinear dispersion relations and prediction of solitary waves and compactons in nonlinear systems.

*Teaching Experience:*

- *Bucharest University:* Course taught: Analytical mechanics (3000), Quantum mechanics (4000), Thermodynamics and statistical physics (4000), Group theory in solid state physics (7000), Electrodynamics and theory of relativity (4000). Group theoretical methods in physics, Symmetries in physics (8000). Special classes in Hopf algebras and quantum groups for physicists (7000) Theoretical Physics classes at the Faculty of Mathematics, Bucharest University (3000).
- Supervising 18 diploma works and 5 PhD thesis, e.g. *Nuclear collective models, cluster radioactivity, quantum groups breaking of symmetry* (D. Vranceanu, at present faculty at Georgia Tech.), and *Solitons, knot theory and dynamical systems* (A. R. Ionescu, at present Frankfurt/M University). Other former students of mine are visiting researchers or postdocs in Munich, Giessen, Frankfurt, Paris, Atlanta, New South Wales.
- Jacob Matherne, math graduate NSU, I was his JOVE research advisor received 1<sup>st</sup> prize Am.Math.Soc. (Southern Section) in February 2010, and received \$26,000 fellowship for PhD program at Math. Dept. LSU to continue same research.
- *Germany:* Seminars in nuclear and mathematical physics in Frankfurt/Main and Giessen University. Conducting research with U. Eichmann, 2001.
- *United States of America:* Collaboration with three PhD students Louisiana State University, 1997-2001: G. Popa (now at Notre Dame University), G. Stoitcheva (now at Oakridge Natl. Lab) and V. Gueorghiev.
- *Physics 2101* for technical students at LSU. Fall 1999, Spring 2001.
- *Physics 100* for medical students, Our Lady of The Lake College, Arts and Science Dept. Summer and Fall 1999. *Mathematics 1000 and 2000* at Dept. Mathematics, LSU.
- *Northwestern State University, Natchitoches, LA:* Physics 2030, 2040, 2510, 2520; Physics Lab. 2031, 2041, 2511, 2521; Physical Science 1010; Chem-Phys-Orientation-1010, Undergraduate Seminar 4900; Research Problems 4950 (nonlinear physics, wavelets) Advanced Lab. 3291 (spectroscopy, radiation, wavelets, vacuum science, etc.) Biophysics 3900; Experimental Physics for Teachers PHYS-5020 (graduate class) through the *LaSIP* program of Louisiana Board of regents, involving 25 high-school as a part programs of science education reform in Louisiana.
- Collaboration in the *JOVE* program with 32 undergraduate students (2001-2007), and collaboration with 4 physics teachers.
- Remodeling PHYS-1010: denominated to redesign a new syllabus, (use of multi-media and technology) at NSU.

- ERAU, Daytona Beach, FL: MA-241, MA-242, MA-348, MA-490.

Editor and Organizer of Conferences:

- 14<sup>th</sup> International Conference on Geometry Integrability and Quantization June, 2012, Varna, Bulgaria.
- The 7<sup>th</sup> IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, April 4-7, 2011 Athens, GA. Organizing special session *Nonlinear Theory of Drops, Surfaces and Filaments* and member in the scientific committee.
- Principal lecturer at the 12<sup>th</sup> International Conference on Geometry Integrability and Quantization June, 2010, Varna, Bulgaria.
- Organizing workshop at the Council of Undergraduate Research 2010 National Conference, June 2010, Utah on the topic: *Twenty four examples of undergraduate research problems that will guarantee success and publication.*
- The 6<sup>th</sup> IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, March 23-26, 2009 Athens, GA. Organizing special session *Vortex Dynamics* and member in the scientific committee.
- The 5<sup>th</sup> IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, April, 2007, Athens, GA. Member in the Scientific Committee and organizer of two special sessions *Nonlinearity in biomathematics*, and *Solitons on compact manifolds.*
- The 4<sup>th</sup> IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, April 9-12, 2005, Athens, GA. Member in the Scientific Committee and organizer of the special session *Solitons on compact manifolds.*
- General Chair: 1<sup>st</sup> ISIS International Symposium on Interdisciplinary Science, Natchitoches, LA, October 6-8, 2004, [www.scitech.edu/IDEAS](http://www.scitech.edu/IDEAS) published AIP Conference Proceedings 755 (Eds. A. Ludu *et al*, Melville NY, 2005).
- The 3<sup>rd</sup> IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, April 7-10, 2003 Athens, GA. Organizing special session *Solitons and Patterns on Closed Contours/Surfaces* and member in the scientific committee.
- The 2<sup>nd</sup> IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, April 9-12, 2001, Athens, GA. Member in the Scientific Committee and organizer of the Special Session *Nonlinear Schrodinger and Gross-Pitaevskii Equations and Bose-Einstein condensates.*
- Member in the Organizing Committee at the 7<sup>th</sup> International Wigner Symposium, July 24-29, 2000, University of Maryland.
- Co-organizer of the Special Session *Integral Transforms* at the Joint AMS Conference, January 2001 New Orleans.
- The 1<sup>st</sup> IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, April 7-10, 1999 Athens, GA. Organizing special session *Solitons and Wavelets* and member in the scientific committee.
- The 3<sup>rd</sup> IMACS/IEEE International Multi-Conference CSSC'99, July 4-8, 1999, Athens, Greece.
- Member in the Organizing Committee at the 6<sup>th</sup> International Wigner Symposium, 16-22 August 1999, Istanbul.

#### Books:

1. *"Nonlinear Waves and Solitons on Contours and Closed Surfaces"*, 2<sup>nd</sup> Edition, Springer Series in Synergetics, (Springer-Verlag, New York, 2012) ISBN: 978-3-642-22894-7.
2. *"Nonlinear Waves and Solitons on Contours and Closed Surfaces"*, Springer Series in Synergetics, (Springer-Verlag, Heidelberg, 2007).
3. *Integrated Lab Textbook* (Linus Publ. Inc., New York 2011)

4. *Integrated Elements of Science* (Pearson, Boston 2009)

#### Papers Published in Refereed International Journals:

1. Liu, D., Antolos, D. and Ludu, A. (2012), Burglary Crime Analysis Using Logistic Regression, paper submitted to 56th Human Factors and Ergonomics Society Annual Meeting, October 22-26, 2012, Westin Boston Waterfront Hotel, Boston, MA
2. ACE - A Model Centered REU Program Standing on the Three Legs of CSE: Analysis, Computation and Experiment, *Procedia Computer Science* (2012) Proceed. Int. Conf. Comp. Sci., ICCS 2012 (with Hong P. Liu).
3. Vortex states in axially symmetric superconductors in applied magnetic field, *Mathematics and Computers in Simulation*, (February 2012), doi:10.1016/j.matcom.2012.02.001
4. Dipole Vortex Patterns: Beyond Hypergeometric, *Journal of Geometry and Symmetry* **25** (2012).
5. Differential Geometry of Moving Surfaces and its Relations to Solitons, *Journal of Geometry and Symmetry in Physics* **21** (2011) 1-28.
6. Periodic Solutions in the Soliton Theory for Nerves, *Biophysical Chem.* **153** (2011) 159-167.
7. Visual motion of curves and surfaces (book review), *J. Geom. Symm. Phys.* **20** (2010) 111-118
8. Analytic Treatment of Vortex States in Cylindrical Superconductors in Applied Magnetic Field, *J. Math. Phys.* **51** 1 (2010) 082903: 1-29 (with J. Van Deunn, M. V. Milosevic, A. Cuyt, and F. M. Peeters).
9. Fiber Bundle Description of Flow and Nonlinear Hydrodynamics on Circles, *J. Nonlin. Math. Phys.* **15** (2008) 157-170.
10. Internally generated nonlinear waves in filament bundles, *Math. Comp. Sim.*, **74** (2007) 179-189 (with N. Hutchings)
11. *Nonlinear Dispersion Relations*, *Math. Comp. Sim.* **74** (2007) 229-236 (with P. Kevrekidis)
12. Is Curvature of the Flagellum involved in the Apparent Cooperativity of the Dynein Arms along the "9+2" Axoneme? *Journal of Theoretical Biology* **265** 2 (2010) 95-103 (with C. Cibert).
13. *Analytic treatment of vortex states produced by magnetic dipole in a superconducting sphere* submitted *Phys. Rev. Lett* (2010) (with M. Doria, M. V. Milosevic, and F. M. Peeters).
14. Elastic Axonemal Models: Soliton Waves and Shapes, *Math. Comp. Sim.* **80** (2009) 223-230 (with C. Cibert)
15. *Solitons and Antisolitons on Bounded Surfaces*, *Mathematics and Computer in Simulation*, **69**, 3-4 (2005) 389-399.
16. *Scattering of NLS solitons with bound quantum states*, in *Nonlinear waves: Classical and Quantum Aspects*, (Kluwer Academic Publ., Netherlands, 2004) pp. 157-162.
17. *Nonlinear equations and wavelets*, *Mathematics and Computer in Simulation* **62** (2003) 91-99 (with R. F. O'Connell, and J. P. Draayer).
18. *Analysis and Classification of Nonlinear Dispersive Evolution Equations in The Potential Representation*, *J. Phys. A: Math. Gen.* **35** (2002) 6075-6090 (with U. Eichmann and J. P. Draayer).
19. *Laplace Transform of Spherical Bessel Functions*, *Physica Scripta* **65** (2002) 369-372 (with F. R. O'Connell).
20. *Nonlinearity and Self-similarity: Patterns and Clusters*, *Mathematics and Computer in Simulation* **55** (2001) 533-540 (with J. P. Draayer).
21. *Soliton Excitations as Emitted Clusters on Nuclear Surfaces*, *J. Phys. G: Nucl. Part. Phys* **27** 3 (2001) 63-74 (with R. Gherghescu and J. P. Draayer).
22. *Antisoliton Model for Fission Modes*, *Mathematics and Computers in Simulation* **55** (2001) 621-626 (with G. Stoitcheva and J. P. Draayer).

23. *Similarity Analysis of Nonlinear Equations and Bases of Finite Wavelength Solitons, International J. Modern Phys. E* **9** (2000) 263-278 (with G. Stoitcheva and J. P. Draayer).
24. *Nonlinearity and Self-similarity: Wavelets and Compactons on a Physical Background, AMS/IP Studies in Advanced Mathematics* **13** (1999) 387-397 (with J. P. Draayer).
25. *Nonlinear Phenomena in Nuclei: The Antisoliton Model for Fission, Rev. M. Fisica* **2** (1999) 80-85 (with G. Stoitcheva and J. P. Draayer).
26. *Patterns on Liquid Surfaces: Cnoidal Waves, Compactons and Scaling, Physica D* **123** (1998) 82-91 (with J. P. Draayer).
27. *Hamiltonian System and Symmetries for Scale Invariant Wavefunctions, Int. J. Mod. Phys E* **7** (1998) 765-775 (with W. Greiner and J. P. Draayer).
28. *Nonlinear Modes of Liquid Drops as Solitary Waves, Phys. Rev. Lett.* **80** (1998) 2125-2128 (with J. P. Draayer).
29. *Wavelets and Quantum Algebras, J. Math. Phys.* **39** (1998) 2346-2361 (with M. Greiner and J. P. Draayer).
30. *Nonlinear deformed  $su(2)$  algebras involving two deforming functions, Czech. J. Phys.* **46** (1996) 1189-1196 (with D. Bonatsos, C. Daskaloyannis, A. Ludu and C. Quesne).
31. *Quasi-continuous Symmetries of Non-Lie Type, Foundations of Physics* **27** (1997) 1123-1138 (with W. Greiner).
32. *Nonlinear Liquid Drop Model. Cnoidal Waves, J. Phys. G: Nucl. Part. Phys.* **23** (1997) 343-364 (with A. Sandulescu and W. Greiner).
33. *A Nonlinear Deformed  $su(2)$  Algebra with a Two-color Quasitriangular Hopf Structure, J. Math. Phys.* **38** (1997) 369-386 (with D. Bonatsos, C. Daskaloyannis, and C. Quesne).
34.  *$SU(1,1)$  Algebraic Description of One-dimensional Potentials within The R-matrix Theory, J. Phys. A: Math. Gen.* **29** (1996) 3669-3677 (with R. A. Ionescu and W. Scheid).
35. *Nonlinear Approach of Alpha and Cluster Decays in The Reaction Channel, Int. J. Modern Phys. E* **5** 2 (1996) 329-344 (with V. G. Kartavenko, A. Sandulescu and W. Greiner).
36. *Generalization KdV Equation for Fluid Dynamics and Quantum Algebras, Foundations of Physics* **26** 5 (1996) 665-678 (with R. A. Ionescu and W. Greiner).
37. *Quasimolecular Resonances in  $\alpha + 20^Ne$  Systems, J. Phys. G: Nucl. Part. Phys.* **21** (1995) 1715-1730 (with A. Sandulescu and W. Greiner).
38.  *$\alpha + 28^Si$  Cluster Structure as Solitons on The Nuclear Surface, J. Phys. G: Nucl. Part.* **21** (1995) L41-L47 (with A. Sandulescu, W. Greiner, K. M. Kallmann, M. Brenner, T. Lonnroth and P. Manngard).
39. *Quantum Deformation Algebra Studied as an Analytical Equivalent of  $s, d$  Interacting Boson Model: Energy Spectra, Phys. Rev. C* **48** 2 (1993) 593-597 (with R. K. Gupta).
40. *A Generalization of The Deformed Algebra of Quantum Group  $SU_q(2)$  for Hopf Algebra, J. Math. Phys.* **34** 11 (1993) 5367-5375 (with R. K. Gupta).
41. *A  $q$ -Tensorial Approach to  $q$ -Oscillators in  $U_q(SU(2))$ , J. Phys. A: Math. and Gen.* **26** 15 (1993) L629-L634 (with D. Vranceanu and M. Stroila).
42. *On the Preformation Factors in Alpha Decay. Alpha Particles as Solitons, Int. J. Modern Phys. E* **2** 4 (1993) 855-872 (with W. Greiner and A. Sandulescu).
43. *A Unified Approach to The Electromagnetic Field Invariants, Rom. J. Phys.* **38** (1993) 873-875 (with F. Moldoveanu).
44. *Dynamical Symmetry Breaking of  $SU(2)$  Model and The Quantum Group  $SU_q(2)$ , J. Phys. G : Nucl. Part. Phys.* **18** (1992) L73-L82 (with R. K. Gupta, J. Cseh, W. Greiner and W. Scheid).



45. *A New Large Amplitude Collective Motion in Nuclei*, *Int. J. Mod. Phys.E* **1** 1 (1992) 169-200 (with A. Sandulescu and W. Greiner).
46. *Clusters as Solitons on The Nuclear Surface, Lectures Notes in Physics* **404** (Springer-Verlag, Berlin, 1991) 72-92 (with A. Sandulescu and W. Greiner).
47. *A Group Theoretical Approach to The Magneto Hydrodynamic Equations and Group Invariant Solutions*, *Contrib. Plasma Phys.* **30** 4 (1990) 449-459 (with I. I. Popescu).
48. *Group Analysis of Euler Equations in The Rotationally Symmetric Case*, *Rom. Journal Phys.* **33** 4-6 (1988) 821-824 (with I. I. Popescu).
49. *Special Einstein-Lorentz Transformations. A Projective Approach*, *Rom. Journal Phys.* **30** 9 (1985) 1-17 (with I. I. Popescu).
50. *The Effect of The Ambient on The Electrical Properties of BaTiO<sub>3</sub>*, *Roum. J. Phys.* **28** 9 (1983) 815-829 (with I. Bunget and I. Munteanu).
51. On the Quadratic Form  $n_1^2 + n_2^2 + n_3^2 - n_4^2$  in  $Z_4$ , *Analele Universitatii din Bucharest* (1986), 16-23 (with I. I. Popescu).

*Proceedings at International Conferences and Preprints:*

All *arXiv* preprints can be found at: <http://eprintweb.org/S/authors/All/lu/Ludu>

1. 2012 "ACE - A Model Centered REU Program Standing on the Three Legs of CSE: Analysis, Computation and Experiment," with H. Liu (Sixth Workshop on Teaching Computational Science, WTCS 2012).
2. 2008 (Sabbatical year): 3 talks Antwerp University (2 at Phys. Dept. and 1 at Math. Dept.) 1 talk Trinity College, University of Dublin, 1 Talk Katolieke Universitaet Leuven, 1 talk Center for Nonlinear and Complex Systems, ULB, Brussels, 1 talk Niels Bohr Institute, University of Copenhagen.
3. Invited talk at the *1<sup>st</sup> Conference of the Euro-American Consortium for Promoting the Application of Mathematics in Technical and Natural Sciences*, Sozopol, Bulgaria, June 22-27, 2009.
4. Invited talk at the *2<sup>nd</sup> Conference of the Euro-American Consortium for Promoting the Application of Mathematics in Technical and Natural Sciences*, Sozopol, Bulgaria, June, 2010.
5. The 6<sup>th</sup> IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, March 23-26, 2009 Athens, GA.
6. The 5<sup>th</sup> IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, April 11-15, 2007, Athens, GA. Member in the Scientific Committee and organizer of 2 special session *Solitons on compact manifolds* and *Solitons in biomathematics*. [http : //www.cs.uga.edu/ thiab/waves2005.html](http://www.cs.uga.edu/thiab/waves2005.html).
7. International Conference on Nonlinear Waves, Integrable Systems, and Applications June-July 2005, Colorado Springs and Boulder, Colorado with talk "Nonlinear waves in 1+ $\epsilon$  dimensions" (<http://math.uccs.edu/> and <http://www.math.unm.edu/>
8. The 4<sup>th</sup> IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, April 9-12, 2005, Athens, GA. Member in the Scientific Committee and organizer of the special session *Solitons on compact manifolds*. [http : //www.cs.uga.edu/ thiab/waves2005.html](http://www.cs.uga.edu/thiab/waves2005.html).
9. "Opening Address", "Nonlinear modeling of 3-d flagellar dynamics", "Flagellar bend dynamics of A. Trypanosomes" and "Concluding remarks" in ISIS International Symposium on Interdisciplinary Science, AIP Conference Proceedings **755** (AIP, Melville, New Yor 2005) pp. IX, 91-106, 137-144, 253-257.
10. Plectics as a scientific theory through critical rationalism. Evaluation with examples from cell dynamics and BEC Second Feynman Festival, University of Maryland, August 20-25, 2004.
11. Talk and General Chair ISIS Symposium, IDEAS and Northwestern State University, October 6-8, 2004.
12. Louisiana Academy of Science Annual Meeting, March 19, 2004, McNeese University, Lake Charles.

13. Internal mKdV waves in flagellum beats, 1+2 dimensional coupling of waves and analysis of coherence of molecular motors, SIAM Nonlinear Waves and Coherent Structures Conference (NW04), October 1-4, 2004, University of central Florida, Orlando.
14. XIV International Congress on Mathematical Physics, Lisbon, Portugal, 07/27-08/02, 2003, poster in the Fluid Dynamics and Nonlinear PDE section.
15. NATO-ARW Conference: Nonlinear Waves: Classical and Quantum Aspect, Scattering of NLS Solitons with Bound Quantum States, Estoril, Portugal, July 12-17, 2003, to be published.
16. Solitons and Antisolitons on Compact Surfaces: Coexistence and Transition, 3<sup>rd</sup> IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, April 7-10, 2003 Athens, GA.
17. Nonlinear Resonant States and Scattering in One-dimensional BEC Model. Computational and Group Theoretical Methods in Nuclear Physics, February 18-21, 2003, Playa del Carmen, Mexico, (World Scientific, London, 2004) pag.183-192
18. AMS, Baton Rouge Conference, March 14-16, 2003, Wavelet analysis of soliton solutions of NPDE
19. NSU Research Day, April 9, 2002. Four presentations: 1-dimensional model for BEC resonant states in a potential well (with R. Back), Ultra-high controlled electric pulses from shocked ceramics (with S. Hatcher), Dynamic collective behavior of individuals in a nonlinear population (with H. Moffett), and Center for Complex Phenomena. Program and Research Group at NSU (with D. Fry, and N. Hutchings).
20. APS-DFD Annual Meeting, Dallas, TX November 2002 Generalized nonlinear equation and solutions for fluid contour/surface deformations
21. LaSIP Physics Project at NSU, 2002 at the 125th National Meeting of The American Association of Physics Teachers (AAPT), Boise ID, August 3-7, 2002 (with P. Withey)
22. Wavelet Processing for Speech and Acoustic Patterns Recognition, 6th World Multiconference on Systemics , Cybernetics and Informatics, July 14-18, 2002, Orlando, FL (with M. Lentz and C. Tate)
23. Classification of The Nonlinear Dynamics of Nuclear Shapes,” APS April Meeting, April 28 - May 1, 2001, Washington, D.C. (with U. Eichmann and J. P. Draayer).
24. Nonlinear Evolution of The Surface within a Liquid-drop Model for Nuclear Structure,” APS April Meeting, April 28 - May 1, 2001, Washington, D.C. (J. P. Draayer).
25. Nonlinear Shape Oscillations of a Bose-Einstein Condensate, The 2nd IMACS Int. Conf. On Nonlinear Evolution. Equations and Wave Phenomena: Computation and Theory, April 9-12, 2001, Athens, GA.
26. Nonlinearity and Self-similarity in Heavy-Ions, APS April Meeting, 2000, Long Beach, CA (with J. P. Draayer).
27. Nonlinear System and Nuclear Physics, Int. Conf. Nucl. Phys., Varna, Sept. 1999 (with G. Stoitcheva and J. P. Draayer).
28. Nonlinear Excitations of Drops as Solitons and Antisoliton Pairs, APS Meeting, DFD'99, November 21-23, 1999, New Orleans, LA (with J. P. Draayer).
29. Soliton and Antisoliton Excitations on Nuclear Surfaces, APS Meeting, Division of Nuclear Physics, October 2 -23, 1999, Pacific Grove, CA (with J. P. Draayer).
30. Coherent States as Solitons on The Nuclear Surface , ”6th International Wigner Symposium”, Istanbul 16-22 August, 1999 (with J. P. Draayer).
31. Nonlinear Equations With Soliton Solutions, 6<sup>th</sup> International Wigner Symposium, Istanbul 16-22 August, 1999 (with J. P. Draayer).
32. Continuous Structures for Discrete Symmetries, The State of Physics at the End of the 20th Century , Santa Fe, N.M., October 26-29, 1996, Eds. F. Cooper, I. Scarcevich, C-I Tan and G. West (World Scientific, Singapore 1999) (with W. Greiner).
33. Nonlinearity and Similarity in Collective Excitations, APS Centennial Meeting, March 20-26, 1999 Atlanta, GA (with J. P. Draayer).

34. Nonlinear Phenomena in Nuclei: The Antisoliton Model for Fission, Symposium on Nuclear Physics, Oaxtepec, Mexico, 5-8 January, 1999 (with G. Stoitcheva and J. P. Draayer).
35. Nonlinearity and Self-Similarity in Nuclear Physics, Division of Nuclear Physics annual Meeting of APS, October 26-30 1998, Santa Fe, NM (with J. P. Draayer)
36. Nonlinearity and Self-Similarity: Wavelets and Compactons on a Physical Background, Trends in mathematical Physics, 14-17 October 1998, University of Tennessee, Knoxville, TN (with J. P. Draayer).
37. Solitons and Wavelets: Self-similar Patterns and Nonlinear Dynamics, Group22: Proceedings of the XXII International Colloquium on Group Theoretical Methods in Physics, Eds S P Corney, R Delbourgo and P D Jarvis (Cambridge, MA: International Press) 1998, 355-359. (with J. P. Draayer).
38. Understanding Wavelets and Possible Applications in Nuclear Physics, 5th Wigner Symposium, Vienna, Austria, August 25-29, 1997, Ed. P. Kasperkowitz & D. Grau), 72-78 (with J. P. Draayer).
39. Continuous Mapping Between the Discrete Symmetries as q-Deformations, Quantum Groups, Deformations and Contractions, Istanbul, Sept., 1997 (with J. P. Draayer).
40. Patterns on Liquid Surfaces: Cnoidal Waves, Compactons and Scaling, Nonlinear Waves and Solitons in Physical Systems, 17th Annual International Conference of the Center for Nonlinear Studies, Los Alamos, NM 12-16 May 1997, ed. R. Camassa, J. M. Hyman and B. P. Luce (North-Holland, Elsevier, Amsterdam, 1998) 82-91 (with J. P. Draayer).
41. Wavelets as Lagrangian Systems, Nonlinear Symmetries of Multiscale Phenomena, The Mardi Gras Conference: "Multiscale phenomena in Science and Engineering", February 7-9, 1997, Baton Rouge, LA (with J. P. Draayer).
42. Nonlinear Liquid Drop Model. Cnoidal Waves and q-Symmetry, The XXth Symposium of Nuclear Physics", Oaxtepec (Morelos), Mexico, January 6-9, 1997 (with J. P. Draayer).
43. Nonlinear Deformed  $su(2)$  Algebras Involving Two Deforming Functions, 5th International Colloquium Quantum Groups and Integrable Systems, 20-22 June 1996, Prague (with D. Bonatsos, C. Daskaloyannis and C. Quesne).
44. Nonlinear Symmetries for a Collective Model in Cluster Physics, Inter. Conf. Nuclear Physics at The Turn of Millennium, George, March 6-12, 1996, World Scientific, Singapore (with A. Sandulescu and W. Greiner).
45. Full Unified Hamiltonian Picture of the Traditional Nonlinear Models in The Context of The Rotator-Vibrator-Soliton-Model, Nuclear Physics at the Turn of The Millennium, March 9-17, 1996, George, South Africa, World Scientific (with A. Sandulescu and W. Greiner).
46. Wavelets and Quantum Algebras, ICTP Int. Report, IC/95/288, Trieste, 1995 (with M. Greiner).
47. Generalized KdV Equation for Fluid Dynamics and q-Differential Approach, ICTP- Int. Report, Trieste, IC/95/128, 1995 (with R. A. Ionescu and W. Greiner).
48. Algebraic Description of One-dimensional Potentials and The  $su(1,1)$  Algebra, ICTP-Trieste Int. Report, IC/95/127, 1995 (with R. A. Ionescu and W. Scheid).
49. Quasimolecular Spectra : Solitons And Breathers on The Nuclear Surface, UFTP 402 preprint/1995, Frankfurt am Main University (with A. Sandulescu and W. Greiner).
50. Nonlinear Excitations of The Nuclear Surface. Quasimolecular Resonances as Solitons and Breathers, Int. Conf. Nucl. Phys. Predeal, Aug.-Sept., (1995) World Scientific, Eds. A. A. Raduta and D. S. Delion (with A. Sandulescu and W. Greiner).
51. Cluster Radioactivity: Solitons, Breathers and Cold Fission, Proceed. of The 6th Inter. Conf. on Clusters in Nuclear Structure and Dynamics, 6 - 9 Sept. (1994) Strasbourg, France, ed. F. Haas, 205-214 (with A. Sandulescu and W. Greiner).
52. Cluster Radioactivity. Clusters as Solitons and Breathers on The Nuclear Surface. Neutronless Fission of  $^{252}\text{Cf}$  as an Extension of Cluster Radioactivity, Proceed. of 7th Inter. Conf. on Nucl. React. Mech., Varenna, 6-11 June (1994), ed. E. G. Gladioli, (Univ. degli Studi di Milano), 466-475 (with A. Sandulescu and W. Greiner).

53. Cluster Effects in Elastic Alpha Scattering by Silicium and Sulfur Isotopes, *ibidem* Ref. above, 430-438 (with A. E. Antropov, M. Brenner, V. Z. Goldberg, W. Greiner, K. M. Kallman, T. Lonnroth, P. Manngard, A. E. Pakhomov and V. V. Pankratov).
54. q-Deformation of  $su(3)$  into  $su(2,1)$  Towards a Potential Picture, *Frontier Topics in Nuclear Physics*, Eds. W. Scheid and A. Sandulescu, NATO ASI Series , Plenum Press, New York, (1994) 483-484.
55. Cluster Radioactivity: Two Soliton Solutions on Sphere, *ibidem* Ref . above, 57-70. (with A. Sandulescu and W. Greiner).
56. High Magnetic Field Generation in Exploding and Electromagnetic Compression Experiments, *Megagauss Magn. Field Generation in Expl. and Electr. Comp. Experiments* , Eds. M. Cowan and R. Spielman, Nova Sciences Publ. Inc., New York, (1994) 195-205. (with V. Zoita, B. Novac, N. Mandache and C. Atanasiu).
57. Cluster radioactivity - A new collective motion in nuclei, *XXX Inter. Winter Meeting on Nuclear Physics*, January 1992, Bormio, Italy, Univ. Studi di Milano, ed. I. Iori, 493-504 (with A. Sandulescu and W. Greiner).
58. Dynamical symmetries and Hopf algebras, *Workshop on Interfaces between Phys. and Math.*, March, 1996, Vienna, Austria, 6 pages (with D. Vranceanu and M. Stroila).
59. Cluster Radioactivity and Nuclear Structure - Clusters as Solitons, *Proc. Inter. Conf. Nucleus and Clusters*, Turku, Finland, June 1991, eds. M. Brenner, F. B. Malik, Springer-Verlag, Berlin, (1991) 262-272 (with A. Sandulescu and W. Greiner).
60. A New Large Amplitude Collective Motion in Nuclei. Clusters as Solitons on The Nuclear Surface, *Inter. Summer School on Nuclear Structure* , Predeal, 1991, World Sci., Singapore, eds. A. A. Raduta et al., (1991) 138-172 (with A. Sandulescu).
61. A New Extension of  $SU_q(2)$  and Breaking of Symmetry, *ibidem* Ref. above, 313-318.
62. Exotic Radioactivity. Clusters as Solitons on the Nuclear Surface, *Inter. Summer School: Recent Adv. in Nucl. Structure*, Predeal, 1990 World Scientific, Singapore, ed. D. Bucurescu, 413-433 (with A. Sandulescu).
63. Study of Some Properties of Partial Differential Equations by Lie Algebra Methods, *ICTP - preprint IC/90/70*, Trieste, Italy, 1997 (with K. Chongdar).
64. Transformation Group Methods Applied to The Magneto Hydrodynamic Equations of an Incompressible Fluid, *ICEFIZ-preprint* , FT-338, Bucharest, Romania 1988.
65. Shock Wave Explozive Energy Generator of PZT Ferroelectric, *4th Inter. Conf. on Megagauss Magnetic Field Generation* , July 1986, Santa-Fe, eds. C.M.Fowler, R.Caird and D.J.Erikson, Plenum Press, New-York, (1986) 369-375 (with P. Nicolau and B.Novac).
66. Helical Magnetic Flux Compression Generators , *ibidem* Ref. above, 389-396 (with B. Novac).
67. Problems of Interpolation and Smoothing with Spline Functions, *2nd Inter. Conf. "Trends in Quantum Electronics"*, E. P. S. European Conf. Abstr. , 1996 , Bochum, (1985), 264-266.
68. Experiments with a Plasma Focus Device Powered by Magnetic Flux-Compression Generators, *E.P.S. 12<sup>nd</sup> European Conf. on Controlled Fusion* , Budapest, Sept. 1985, Eds. L. Pocs and Montvai, 558-561 (with D. Cotruta, N. Mandache, B. Novac, V. Zambreanu and V. Zoita).
69. Physical and Technology Problems for a Plasma Focus Device with Inductive Storage, *Proceed. 4th Inter. Workshop on Plasma Focus and Z-pinch Research* , Warshaw, Sept. 1985, Ed.
70. *Inst. of Plasma Phys. and Laser Microfusion*, Warshaw, 227-230 (with V. Zoita, I. Marinescu, B. Novac and V. Zambreanu).
71. Magnetic Flux Compression Generator for Energy Supply of Plasma Focus Load, *ibidem* Ref. above, 231-234. (with B. Novac, V. Zoita, V. Zambreanu, C. Atanasiu and F. Spineanu).
72. Numerical Simulations of The Operations of a Plasma Focus Device with Inductive Energy Storage, *Ibidem* Ref. above, 239-242 (with B. Novac, V. Zambreanu and V. Zoita).
73. Experiments with a Plasma Focus Device Powered by Magnetic Flux-Compression Generator, *Ibidem* Ref. above, 243-244 (with I. Ursu, M. Ivascu, D. Cotruta, C. Dumitrescu, N. Mandache, B. Novac, V. Zambreanu and V. Zoita).

74. Order and Chaos in Natural Systems, *Studii si Cercetari Fizica*, 30 (1985) 1-17 (with A. Barsan, A. Dorobantu, N. Nicorovici and V. Vlad).
75. The Special Theory of Relativity, in the volume *The Philosophy of Physics*, E.D.P., Bucharest, (1984), 50-98 (with I.Iovitz-Popescu).
76. National Workshops of Physics, Institute of Atomic Phys. Bucharest. 2 papers (1981), 2 papers (1982), 4 papers (1983) and 3 papers (1985).

*Invited Talks at International Conferences:*

- 1986, Santa Fe, NM (High magnetic fields).
- 1987, Warsaw, Poland (High Magnetic Fields).
- 1988, Budapest, Hungary (Thermonuclear fusion, Plasma Focus).
- 1989, Santa Fe and Novosibirsk, Russia (High magnetic fields).
- 1990, Predeal, Romania (Nuclear Physics).
- 1991, Predeal, Romania (Nuclear Physics).
- 1992, Novosibirsk, Russia (high magnetic fields); Turku, Finland (Nuclear clusters); Bormio, Italy (Nuclear physics); Bad Honev, Germany (Nuclear physics). Predeal, Romania (Nuclear Physics).
- 1993, Predeal, Romania (Nuclear Physics).
- 1994, Padova, Italy and Varenna, Italy (Nuclear Physics).
- 1995, Strasbourg, France, and Predeal, Romania (Nuclear Physics).
- 1996, George, South Africa, and Santa Fe, NM (Physics at the turn of the Millennium).
- 1997, Washington, D.C. (APS meeting); Oaxtepec, Mexico (Nuclear Physics); Baton Rouge, LA (Self-similarity); Los Alamos, NM (Nonlinear physics); Vienna, Austria (Mathematical physics); Istanbul, Turkey (Mathematical Physics).
- 1998, Hobart, Tasmania (Mathematical physics); Knoxville, TN (Mathematical physics); Santa Fe, NM (APS meeting).
- 1999 Athens, GA (Nonlinear waves); Athens, Greece (Wavelets and applications).
- 2000 Long Beach, CA (APS meeting).
- 2001 Washington, D.C. (APS meeting); Athens, GA (Nonlinear waves).
- 2002 Paris, France; ICGTMP-Colloquium Group 24 July 15-20; 6th World Multiconf. on Systemics, Cybernetics and Informatics, Orlando, Florida; 125th National Meeting of The American Association of Physics Teachers, Boise ID; 2<sup>nd</sup> WSEAS Int. Conference on *Wavelet analysis and multirate systems*, Vouliagmeni, Greece, December 29-31; Division of Fluid Dynamics Meeting, November 24-26, Dallas, Texas
- 2003, April, American Mathematical Society Conference, LSU Baton Rouge; The 3<sup>rd</sup> International IMACS conference on *Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory* Athens, GA (session organizer); Invited talk at *Computational and group theoretical methods in nuclear physics*, Playa del Carmen, Mexico, February 18 - 21, 2003; NSU Research Day, April 9 (4 talks); NATO Conference on Nonlinear waves, Estoril, Portugal, July 12-17, 2003; IAMP Conference, Lisbon, Portugal (July 20-26).
- 2004, Washington DC (Feynman Festival, August 19-27), Orlando, FL (SIAM/SIAG Biomathematics, October 1-4); ISIS Interdisciplinary Symposium (Natchitoches, October 6-8).
- 2006, University of Massachusetts Amherst, giving an invited seminar at Dept. of Mathematics and Statistics
- 2007, University of Antwerp, Belgium.

- 2008 (Sabbatical year): 3 talks Antwerp University (2 at Phys. Dept. and 1 at Math. Dept.) 1 talk Trinity College, University of Dublin, 1 Talk Katolieke Universitaet Leuven, 1 talk Center for Nonlinear and Complex Systems, ULB, Brussels, 1 talk Niels Bohr Institute, University of Copenhagen.
- Invited talk at the *1<sup>st</sup> Conference of the Euro-American Consortium for Promoting the Application of Mathematics in Technical and Natural Sciences, Sozopol, Bulgaria, June 22-27, 2009.*
- *Invited talk at the 2<sup>nd</sup> Conference of the Euro-American Consortium for Promoting the Application of Mathematics in Technical and Natural Sciences, Sozopol, Bulgaria, June, 2010.*
- *Workshop "Twenty four examples of undergraduate research problems that will guaranty success and publication" chaired at the 13<sup>rd</sup> CUR 2010 National Conference, Weber S. U., Odgen, UT.*
- *Lectures given at the XII<sup>th</sup> Int. Conf. Geometry, Integrability and Quantization, Varna, June 2010; <http://www.bio21.bas.bg/conference/>*

*Patents:*

Patents Nr. 78136/1974, Nr. 70774/1978, Bucharest, Romania.

Patent submitted to Procter & Gamble GmbH, Frankfurt am Main, Germany, (2000).

*Miscellany Published:*

1. *The Mathematics of a Dog*, Ed. Dennis M. Gaughan (Poetry Cafe Forum, 1997, , Fairfax).
2. *A Quantum Evening Story*, in Academy of Brooklyn Poets, <http://www.brooklynpoet.com>, 1997.
3. *Messages in a Silenced Hush in Georgian Blue Poetry Anthology* Ed. Freudeman Associates (Collingwood, Ontario, 1998).
4. *The Nonlinear Land*, overleaf, original sketch in *Proceedings of the XII International Colloquium on Group Theoretical Methods in Physics*, pp.1, Eds. S. P. Corney, R. Delbourgo and P. D. Jarvis, (International Press Inc., Boston, 1999). Copyright Int. Press.

*Hobbies:*

Private Pilot, 1 engine VFR, Cessna since 2007.

Former press correspondent for the US at "Lumea Romaneasca". Associate Editor at the magazine "Romanian Roots" (Georgia) and "Express 2000", New York (1999-2001).

AMA member, enduro (Participant 6 Days National Enduro Event, Forest Hill, LA, 1998)

**References:**

Can be made at request from my confidential database at it Interfolio Inc. at <https://www.referencenow.com/>. Please contact me.